IN THE SPECIFICATION:

Please amend paragraph **[0006]** as follows:

[0006] While this procedure greatly increases the efficiency of the drilling procedure, a further problem is encountered when the casing is cemented upon reaching the desired depth. While one advantage of drilling with casing is that the drill bit does not have to be retrieved from the ~~well bore,~~ wellbore, further drilling may be required. For instance, cementing may be done for isolating certain subterranean strata from one another along a particular extent of the wellbore, but not at the desired depth. Thus, further drilling must pass through or around the drill bit attached to the end of the casing.

Please amend paragraph **[0009]** as follows:

[0009] In one approach, a drilling assembly, including a drill bit and one or more hole enlargement ~~tool~~ tools such as, for example, an underreamer, is used which drills a borehole of sufficient diameter to accommodate the casing. The drilling assembly is disposed on the advancing end of the casing. The drill bit can be retractable, removable, or both, from the casing. For example, U.S. Patent No. 5,271,472 to Leturno discloses a drill bit assembly comprising a retrievable central bit insertable in an outer reamer bit and engageable therewith by releasable lock means which may be pressure fluid operated by the drilling fluid. Upon completion of drilling operations, the motor and central retrievable bit portion may be removed from the wellbore so that further wellbore operations, such as cementing of the drillstring or casing in place, may be carried out or further wellbore extending or drilling operations may be conducted. Since the central portion of the drill bit is removable, it may include relatively robust materials that are designed to withstand the rigors of a downhole environment, such as, for example, tungsten carbide, diamond, or both. However, such a configuration may not be desirable since, prior to performing the cementing operation, the drill bit has to be removed from the ~~well bore~~ wellbore and thus the time and expense to remove the drill bit is not eliminated.

Please amend paragraph **[0015]** as follows:

[0015] Further, conventional casing shoes have not employed~~-depth-of-cut~~ depth-of-cut limiting structures. Particularly, U.S. Patent No. 6,298,930 to Sinor et al., assigned to the assignee of the present invention and the disclosure of which is incorporated in its entirety by reference herein, discloses exterior features disposed on a drill bit that preferably precede, taken in the direction of bit rotation, cutters with which they are associated, and provide sufficient bearing area so as to support the bit against the bottom of the borehole under~~-weight-on-bit~~ weight-on-bit without exceeding the compressive strength of the rock formation.

Please amend paragraph **[0071]** as follows:

[0071] FIG. 11B shows a top view of the casing bit shown in FIG. 11A;

Please amend paragraph **[0073]** as follows:

[0073] FIG. 12B shows a top view of the casing bit reamer shown in FIG. 12A;

Please amend paragraph **[0080]** as follows:

[0080] FIG. 15B shows a top view of the casing bit shown in FIG. 15A;

Please amend paragraph **[00109]** as follows:

[00109] During drilling, fluid courses 24 between circumferentially adjacent blades 22 may be provided with drilling fluid flowing through apertures 33 that extend between the interior of the casing bit 12 and the face 26 thereof. Formation cuttings are swept away from the cutting elements (not shown) by drilling fluid emanating from apertures 33, the fluid moving generally radially outwardly through fluid courses 24 and then upwardly through junk slots 35 to an annulus between the casing section 40 (FIGS. 1C-1E) from which the casing bit 12 is suspended and the borehole 32 (FIG. 1D) and upwardly to the surface of the earth above~~-the-~~ subterranean formation 42 (FIG. 1D).

Please amend paragraph **[00112]** as follows:

[00112] Accordingly, as shown in FIG. 1D, casing section 40 and casing bit 12 may be surrounded by cement 34, or other hardenable material, so as to cement the casing bit 12 and casing section 40 within borehole 32, after borehole 32 is drilled. Cement 34 may be forced through the interior of casing section 40, through the apertures 33 formed in casing bit 12, about the junk slots 35 ~~(FIG.~~ <u>(FIGS.</u> 1A and 1B), and into the annulus formed between the wall of borehole 32 and the outer surface of the casing section 40. Of course, conventional float equipment may be used for controlling and delivering the cement to the casing bit 12. Cementing the casing bit assembly 11 into the borehole 32 may stabilize the borehole 32 and seal formations penetrated by borehole 32. In addition, it may be desirable to drill past the casing bit 12, so as to extend the borehole 32, as described in more detail hereinbelow.

Please amend paragraph **[00115]** as follows:

[00115] As may further be seen in reference to FIG. 1F, casing bit 45 may include an integral stem section 43 extending longitudinally from the nose portion 20 of casing bit 45 that includes one or more frangible regions 19. Alternatively, flow control equipment may be included within integral stem section 43 of casing bit 45. Casing bit 45 includes the above-mentioned features as described in relation to casing bit <u>assembly</u> 11, as labeled and shown in FIG. 1E. However, casing bit 45 may also include a threaded end 41 for attaching the casing bit 45 to a drill string or casing string (not shown). Alternatively or additionally, casing bit 45 may include, without limitation, a float valve mechanism, a cementing stage tool, a float collar mechanism, a landing collar structure, other cementing equipment, or combinations thereof, as known in the art, within integral stem section 43.

Please amend paragraph **[00116]** as follows:

[00116] More particularly, as shown in FIG. 1G, integral stem section 43 of casing bit 45 may include, as component 47, cementing float valves as disclosed in U.S. Pat. Nos. 3,997,009 to Fox and 5,379,835 to Streich, the disclosures of which are incorporated by reference herein. Further, valves and sealing assemblies commonly used in cementing operations as disclosed in

U.S. Pat. Nos. 4,624,316 to ~~Baldridge,~~ Baldridge et al. and 5,450,903 to Budde, the disclosures of each of which are incorporated by reference herein, may comprise component 47. Further, float collars as disclosed in U.S. Patent No. 5,842,517 to Coone, the disclosure of which is incorporated in its entirety by reference herein, may comprise component 47. In addition, U.S. Patent Nos. 5,960,881 to Allamon et al. and 6,497,291 to Szarka, the disclosures of which are incorporated in their entirety by reference herein, disclose cementing equipment which may comprise component 47. Any of the above-referenced cementing equipment, or mechanisms and equipment as otherwise known in the art, may be included within integral stem section 43 and may comprise component 47 thereof.

Please amend paragraph **[00125]** as follows:

[00125] FIG. 2E shows drilling profile 14 of drilling tool 10 which substantially corresponds to the inner profile 16 of casing bit 12, wherein both are shaped in a slightly inverted cone geometry and wherein the laterally outer portions of inner profile 16 are rounded or exhibit a fillet. ~~Laterally,~~ "Laterally," as used herein, means a distance in relation to a central axis or drilling axis of the drilling tool. The amelioration of sharp corners may reduce undesirable stresses in the casing bit 12 or may improve the performance of drilling tool 10 during drilling through the casing bit 12. Similarly, FIG. 2F illustrates a drilling tool 10 including a drilling profile 14 that substantially corresponds to the inner profile 16 of the casing bit 12 wherein the outer ~~profile~~ profile 18 of the drilling tool 10 forms an inverted cone geometry. In addition, the inner profile 16 of the casing bit 12 includes rounded or filleted laterally outer portions thereof. Also, FIG. 2G illustrates a drilling tool 10 including a drilling profile 14 that substantially corresponds to the inner profile 16 of the casing bit 12 wherein the outer ~~profile~~ profile 18 of the drilling tool 10 is shaped substantially flat or planar. In addition, the inner profile 16 of the casing bit 12 includes laterally outer portions that are rounded or filleted.

Please amend paragraph **[00128]** as follows:

[00128] Turning now to FIG. 4A, the casing bit 12 may be designed to minimize the average thickness thereof in the region configured for drilling therethrough in relation to

expected loading conditions due to torque and weight-on-bit applied to the casing bit 12 during drilling. The thickness, labeled ~~"t"~~ "*t*" on FIG. 4A, of casing bit 12 generally refers to the distance between the surface formed by the inner profile 16 and the surface formed by the outer profile 18 along the expected direction of drilling therethrough (shown in FIG. 4A as vertical). Accordingly, reducing the average ~~thickness t~~ thickness *t* of casing bit 12 in the region configured for drilling therethrough may aid in drilling therethrough by way of drilling tool 10 or may reduce damage to cutting elements carried by drilling tool 10. Reducing the average ~~thickness t~~ thickness *t* of casing bit 12 may be accomplished by finite element modeling or other predictive modeling of the stresses that are generated by expected forces of drilling, such as torque and weight-on-bit. Specifically, the average ~~thickness~~ thickness *t* of the casing bit 12 may be selected so that the maximum predicted stress in the casing bit 12 in response to the expected forces of drilling is at least one and ~~one half~~ one-half times the yield stress of the material comprising the casing bit 12, but may be between one and ~~one half~~ one-half and three times the yield stress thereof, or more. Finite element analysis or other modeling concepts may be employed to predict or model the stresses within casing bit 12 that may be experienced by drilling therewith.

Please amend paragraph **[00129]** as follows:

[00129] In another aspect of the present invention, FIG. 4B shows casing bit 72 comprising a relatively thin outer shell 27 having a ~~thickness t_1~~ thickness t_1 and at least one inner core 29 having a ~~thickness t_2~~ thickness t_2 that is disposed therein. It may be appreciated that if outer shell 27 comprises a material with a reasonably high yield stress, so that selecting the average ~~thickness t_1~~ thickness t_1 thereof by way of finite element modeling or other predictive modeling of the stresses in relation to expected forces of drilling, such as torque and weight-on-bit, may yield a relatively small ~~thickness t_1.~~ thickness t_1. As may also be appreciated, affixation region 15 may be preferably formed as a portion of outer shell 27, without limitation. Such a thickness may result in outer shell 27 exhibiting relative flexibility and, therefore, may become damaged by flexure by drilling solely therewith. However, inner core 29 may be disposed and affixed within outer shell 27 to provide stiffness and strength thereto. Of

course, additional shells or layers (not shown), if any, may be affixed adjacent inner core 29, and so on, respectively. ~~Thickness t_2~~ Thickness t_2 may be selected in relation to t_1, so that the maximum predicted stress in the casing bit 72 in response to the expected forces of drilling is at least two times the yield stress of the material in which the stress exists, but may be between two and three times the yield stress of the material in which the stress exists, or more. Such a configuration may facilitate drilling through casing bit 72 subsequent to drilling a borehole therewith. Outer shell 27 may comprise steel, iron alloys, tungsten carbide powder infiltrated with a copper based binder, nickel alloys, any of which may be machined or cast to form outer ~~profile 16.~~ profile 18. Inner core 29 may preferably comprise a relatively ductile material that is more readily drillable than outer shell 27, such as aluminum, brass, bronze, or phenolic. Inner core 29 material may be disposed within outer shell 27 in a molten form, if appropriate, and molded or machined to form inner ~~profile 18.~~ profile 16. Additional shells or inner cores (not shown) may also be formed in accordance to outer shell 27 or inner core 29, without limitation. Alternatively, outer shell 27 and at least one inner core 29 may be formed separately and affixed to one another by fasteners, welding, brazing, or other mechanical affixation techniques as known in the art. Such a configuration may provide sufficient strength and stiffness to the casing bit 72 for drilling a subterranean formation, while facilitating subsequent drilling therethrough.

Please amend paragraph **[00130]** as follows:

[00130] As discussed above, a casing bit of the present invention may have an outer profile that exhibits an inverted cone geometry. As shown in more detail in FIG. 5, a casing bit 12 of the present invention may include an outer profile 18 that forms an inverted cone region 23, as mentioned above. More specifically, the inner straight line forming a portion of outer profile 18 and extending from longitudinal axis 17 may be oriented at an angle θ that is less than 90° with respect to the longitudinal axis 17, thus forming an "inverted cone" region 23. Such a configuration may improve drilling performance of casing bit 12. In addition, inner profile 16 may generally correspond to the shape of the outer ~~profile,~~ profile 18, as shown in FIG. 5. As mentioned above, an upwardly extending feature, such as region 21 of casing bit 12 may be configured to facilitate centering of a drilling tool (not shown) that exhibits a generally

concave-shaped outer profile while the drilling tool drills through the casing bit 12. Such a configuration may also stabilize the drilling tool as it drills through the casing bit 12.

Please amend paragraph **[00131]** as follows:

[00131] FIGS. ~~6A-6B~~ 6A and 6B illustrate a casing bit 112 according to the present invention, the casing bit 112 including a nose portion 120, face 126, generally radially extending blades 122, and forming fluid courses 124 extending to junk slots 135 between circumferentially adjacent blades 122, as generally described in relation to FIGS. 1A and 1B. However, blades 122 include cutting elements 140, such as, for instance, PDC cutting elements. Cutting elements 140 may be affixed upon the blades 122 within pockets (not shown) of casing bit 112 by way of brazing, welding, or as otherwise known in the art. Also, casing bit 112 may comprise, without limitation, metals, metal alloys, particulate composites or any combination thereof, such as, for instance, steel, aluminum, bronze, brass, and tungsten carbide composites.

Please amend paragraph **[00132]** as follows:

[00132] Blades 122, as shown in ~~FIG.~~ FIGS. 6A and 6B, may be curved and extend generally radially outwardly in a generally spiral fashion from the centerline to the radial outer extent of the casing bit 112. In addition, the gage regions 125 of blades 122 may extend longitudinally away from the nose portion 120 of the casing bit 112 in a generally helical fashion, defining junk slots 135 between circumferentially adjacent gage regions 125. Also, the gage regions 125 of blades 122 may be configured to define the outermost radial extent of casing bit 112 and substantially a radius of the wall surface of the borehole. Gage regions 125 may have wear-resistant inserts or coatings, such as cutters, natural or synthetic diamond, or hardfacing material, on radially outer surfaces thereof as known in the art to inhibit excessive wear thereto. The elongated nature of the spiraled blades 122 may provide additional length along which cutting structures may be disposed so as to enhance cutting redundancy at any given radius. In addition, such a configuration may provide increased circumferential contact around the borehole which may improve the stability of the drilling operation during use of the casing bit 112.

Please amend paragraph **[00135]** as follows:

[00135] In addition, as shown in FIG. 7A, one or more of blades 168 of casing bit 162 may include rotationally trailing grooves 180 formed therein. Explaining further, rotationally trailing grooves 180 follow, in relation to the direction of intended rotation of the casing bit 162, the cutting elements disposed on the blade in which they are formed. Rotationally trailing grooves 180 may follow a circumferential path or a tangential path, in relation to an intended rotation of the casing bit 162. In addition, rotationally trailing grooves 180 may have a tapered geometry in which the width of the <u>rotationally trailing</u> grooves 180 increases along a direction from the rotationally leading face of two of blades 168 to the trailing edges thereof. Of course, such an embodiment is an example, the present invention contemplates that one or more of blades 168 may include at least one rotationally trailing groove 180. Put another way, one of blades 168 may include at least one rotationally trailing groove 180, or, alternatively, more than one of blades 168 may include at least one rotationally trailing groove 180. Rotationally trailing grooves 180 may extend at least partially through blades 168, through a portion of nose portion 160, or both. Thus, rotationally trailing grooves 180 may communicate drilling fluid between the interior of the casing bit 162 and the exterior thereof. The presence of rotationally trailing grooves 180 may aid in drilling through the casing bit 162, by separating blades 168 into smaller sections as they are partially drilled through by a drilling tool.

Please amend paragraph **[00141]** as follows:

[00141] In a first embodiment, a cutting element of the present invention may comprise a superabrasive layer bonded to a substrate wherein the substrate may be substantially free of carbide. The term "carbide," as used herein, refers to a compound of carbon and one or more metallic ~~element.~~ <u>elements.</u> Carbide may generally exhibit relatively hard and abrasive properties. Particularly, tungsten carbide is known to exhibit a relatively high hardness as well as a relatively high resistance to abrasion, erosion, or both. Accordingly, the use of conventional cutting elements that include cemented tungsten carbide within a casing bit of the present invention may cause difficulty in drilling therethrough.

Please amend paragraph **[00148]** as follows:

[00148] In yet another embodiment of a cutting element of the present invention, the superabrasive material included therein may be sized and positioned to facilitate drilling through a casing bit employing same with a drilling tool. More particularly, the abrasive volume of the cutting element may be sized and configured so as to reduce the damage that may be caused in drilling through a casing bit employing one or more of the cutting elements. ~~Abrasive volume,~~ "Abrasive volume," as used herein, is intended to indicate a material that exhibits at least one of relatively high hardness, abrasive-resistance, and erosion-resistance. For instance, an abrasive volume may include carbide, diamond, boron nitride, ceramic, or other material exhibiting at least one of relatively high hardness, abrasive-resistance, and erosion-resistance. For example, a cutting element which is generally configured as a portion of a cylinder, according to U.S. Patent No. 5,533,582 to Tibbitts, assigned to the assignee of the present invention and the disclosure of which is incorporated in its entirety by reference herein, may be employed by the casing bit of the present invention.

Please amend paragraph **[00153]** as follows:

[00153] Alternatively, or additionally, as discussed above, the amount of abrasive material comprising cutting elements 332 generally within region x1 may be adjusted to substantially wear away or be removed in response to drilling a subterranean formation to facilitate drilling through a casing bit employing same. Thus, the above-mentioned cutting elements 200, 201, 210, and 220 as described in relation to FIGS. 8A-9D according to the present invention may be used within region x1 of the casing bit 312 of the present invention. As may be appreciated, such a configuration may assist in removing region x1 of casing bit 312 by way of drilling therethrough via reducing the amount of materials exhibiting at least one of relatively high hardness, relatively high ~~abrasive resistance,~~ abrasion resistance, and relatively high ~~erosion resistance~~ erosion resistance at the time at which drilling through the casing bit 312 is desired.

Please amend paragraph **[00165]** as follows:

[00165] As shown in ~~FIG.~~ FIGS. 13A and 13B, the present invention contemplates a casing bit reamer 462 having two longitudinally superimposed sections, a pilot bit section 461 and a reamer wing section 463. Pilot bit section 461 includes a bit body 473 having generally radially extending blades 472, extending to a gage region 475 which is configured to define the outermost radial surface of the pilot borehole. In addition, cutting elements 471 may be affixed to blades 472 disposed within cutting element pockets formed thereon by way of brazing or as otherwise known in the art. Likewise, reaming wing section 463 includes a tubular body 484 having generally radially extending blades 478 disposed only about a portion of the circumference of tubular body 484. The blades may include cutting elements 481 and may extend to corresponding gage regions 485, which extend longitudinally from tubular body 484 and may be configured to define the outermost radial surface of the reamed borehole. Of course, the pilot bit section 461, the reamer wing section 463, or both, may include apertures 466 (FIG. 13B) for communicating drilling fluid from the interior of the casing bit reamer 462 to the cutting elements 471 and 481 thereon.

Please amend paragraph **[00170]** as follows:

[00170] The present invention also contemplates that the delivery and communication of drilling fluid may be advantageously configured in relation to a casing bit 512 of the present invention. FIG. 14A shows a top view of casing bit 512, which includes generally radially extending blades 522. Also as shown in FIG. 14A, casing bit 512 includes apertures 533 for delivering and communicating drilling fluid to the blades 522 during drilling. Turning to FIG. 14B, retaining structure 531 may be formed as a portion of casing bit 512 and may be configured for receiving a nozzle 536 (FIG. 14C) or a sleeve (not shown). As shown in FIG. 14C, nozzle 536 may be configured with a bore 537 extending through a body 538. Further, nozzle 536 may include a threaded portion 539 for affixing the nozzle 536 within a retaining structure 531. Alternatively, the nozzle 536 may be brazed into the retaining structure. Accordingly, retaining structure 531 may comprise a corresponding threaded surface, an ~~O-ring~~ O-ring-type groove for sealing between the nozzle 536 and retaining structure 531, or both.

Alternatively, nozzle 536 may comprise a sleeve that is threadedly affixed or brazed into the retaining structure 531. Accordingly, a sleeve (not shown), as known in the art, may be formed by a body 538 forming a bore 537 as described in relation to nozzle 536, except without the threaded portion 539. Also, as may be appreciated, retaining structure 531 may form a disc, sleeve, port, nozzle, a reduced cross-sectional area, or a bore and may not be configured to accept any additional structural component.

Please amend paragraph **[00192]** as follows:

[00192] In another embodiment of the present invention, a casing bit of the present invention may be mechanically configured to be frangible, weakened, or fractured preferentially, in response to forces applied thereto subsequent to drilling operations. Particularly, casing bit 852 of the present invention may include one or more recesses or grooves 855 that may cause the casing bit to be frangible, weakened, or fractured preferentially. Turning to FIGS.~~ 21A-21B,~~ 21A and 21B, casing bit 852 is shown as having twelve generally radially extending recesses or grooves 855 formed in the inner profile 856 of casing bit 852. Grooves 855 may have different radial extents, depths, and widths, in relation to the expected drilling forces in the area that the groove is formed. In addition, grooves 855 may be formed on the outside surface, inner surface, or both, of casing bit 852 and may be oriented circumferentially, longitudinally, or in any other suitable orientation. For instance, grooves may be arranged in a so-called pineapple pattern, analogous to the pattern formed on the exterior of grenades to cause preferential shrapnel formation. Additionally or alternatively, welds (not shown) may be formed along the inner profile 856 to strengthen the casing bit 852 for drilling operation, but which may be subsequently removed as a drilling tool (not shown) is disposed within casing bit 852 and begins to drill therethrough. In addition, axial forces, in excess of the axial forces applied while drilling, may be applied to the casing bit 852, during rotation or otherwise, which may cause weakening or failure along the grooves 855. Such a configuration may cause the casing bit 852 to fracture into a number of sections 858 that may be flushed from a borehole by drilling fluid emanating from a drilling tool (not shown) drilling therethrough. Particularly, for instance, a casing bit 852

including grooves 855 may be fractured preferentially into sections 858 by way of at least one of an explosive and an incendiary agent, as discussed above, without limitation.

Please amend paragraph **[00196]** as follows:

[00196] Alternatively, as shown in FIG. 21E, orienting the fiber of a fiber-reinforced composite in a generally circumferential, spiral fashion may support the cutting elements and casing bit ~~body~~ 863 against torque applied thereto during drilling. FIG. 21E depicts a schematic representation of a casing bit 863, shown from an upwardly looking perspective in relation to its face 866, a perspective as if viewing the casing bit 863 from the bottom of a borehole. Casing bit 863 may be formed of a fiber-reinforced composite material wherein one or more fibers 888 are disposed within a matrix material 890. One or more fibers 888 may comprise metal wire, carbon, or ceramic materials. As shown in FIG. 21E, the one or more fibers 888 may be generally disposed along a spiral, the spiral originating substantially at the center of the casing bit 863. Of course, the present invention contemplates that one or more fibers 888 may be generally disposed along a spiral, wherein the spiral originates in one or more different areas (i.e., about different points). Such a configuration may provide structural strength and stiffness in localized regions about which the one or more fibers 888 originate. Casing bit 863 may include a nose portion 870, apertures 877, generally radially extending blades 864 having pockets 880, fluid courses 874 between adjacent blades 864 extending to junk slots 865 and gage regions 875 as discussed in relation to FIG. 21D. Further, one or more fibers 888 may bend, twist, or may otherwise be disposed to form the geometric features of the casing bit 863, such as blades 864 and cutting pockets 880, ~~or,~~ or alternatively, geometric features of casing bit 863 may be formed by machining through the one or more fibers 888. As may be appreciated, orienting the one or more fibers 888 in a generally circumferential, spiral fashion may provide structural support to the cutting elements (not shown) against torque, WOB, or both, that is applied to the casing bit 863 during drilling. However, fiber-reinforced composite casing bit 863 may be relatively easy to drill through, because the spirally-extending one or more fibers 888 may not withstand drilling effectively.

Please amend paragraph **[00200]** as follows:

[00200] As a further alternative, affixing at least one cutting element 332 generally within region x1 by way of soldering may facilitate removal thereof after drilling, particularly by heating the cutting elements 332 by drilling with reduced drilling fluid flow rates. As used herein, ~~brazing~~ "brazing" refers to affixation formed by way of at least partially melting a material at a temperature of about 1000° Fahrenheit or higher, while soldering refers to affixation formed by way of at least partially melting a material at a temperature of between about 400° Fahrenheit to about 1000° Fahrenheit . However, the ranges of soldering and brazing may overlap, above and below 1000° Fahrenheit. In further detail, soldering material (i.e., a solder) may typically comprise tin, lead, silver, copper, antimony, or as otherwise known in the art. Also, solder used to affix at least one cutting element 332 generally within region x1 may preferably comprise a eutectic alloy.

Please amend paragraph **[00201]** as follows:

[00201] In a further alternative, at least one cutting element may be affixed to a casing bit by way of so-called electrically disbonding adhesive. For instance, U.S. Patent No. 6,620,380 to ~~Gilbert,~~ Thomas et al., the disclosure of which is incorporated in its entirety by reference herein, discloses an electrically disbonding material which may be configured as an adhesive, having a lap shear strength in the range of 2000-4000 psi. Further, the bond between the disbondable composition and a substrate may be weakened in a relatively short time by the flow of electrical current across the bondline between the substrate and the composition. Accordingly, at least one of the cutting elements 332 generally within region x1 may be affixed to the casing bit 312 by way of an electrically disbonding material. During drilling, as cutting elements 332 may be typically forced into cutting pockets (not shown) formed within the body of casing bit 312, the electrically disbonding material may exhibit sufficient strength therefor. Upon completion of drilling with casing bit 312, the at least one cutting element 332 within region x1 of casing bit 312 may be removed therefrom by causing an electric current to flow across the electrically disbonding material. Doing so may cause the electrically disbonding material to fail

or weaken, thus allowing the cutting elements 332 within region x1 to be removed from casing bit 312.

Please amend paragraph **[00205]** as follows:

[00205] In yet another aspect of the present invention, referring to FIG. 10A, at least one of cutting elements 332 within region x1 may be affixed to the casing bit 312 by way of fastening elements that are locked, tightened, or affixed in place along the inner~~-profile~~ profile 316 of casing bit 312. For example, at least one cutting element 332 in region x1 may be affixed to casing bit 312 by a fastening element 338 (FIG. 22C) extending therethrough. As shown in FIG. 22C, an enlarged partial cross-sectional view of a cutting element 332 disposed in casing bit 312 is shown, oriented for drilling formation 348. As may be seen, cutting element 332 may comprise diamond table 334 bonded to substrate 336 and may be oriented so that the cutting surface 335 thereof is disposed at a back rake angle, as known in the art. Fastening element 338 extends through cutting element 332 so as to affix the cutting element 332 to casing bit 312. Washer 339 may be disposed between the head portion 337 of fastening element 338 and the cutting surface 335 of cutting element 332 so as to prevent damage to the diamond table 334 by the forces of affixing, tightening, or locking fastening element 338 into place. Fastening element 338 includes end region 343 which is configured for affixing the fastening element 338 to the casing bit 312. For instance, the end region 343 of fastening element 338 may be threaded, welded, pinned, deformed, or otherwise configured to affix the fastening element 338 to the casing bit 312. For instance, an internally threaded member (not shown), such as a nut, may be disposed onto the end region 343 of the fastening element 338.

Please amend paragraph **[00206]** as follows:

[00206] During drilling, the cutting element 332 may proceed into a formation 348 to remove cuttings therefrom. As may be appreciated, head portion 337 of fastening element 338 may be sized to allow the cutting surface 335 to engage the formation at a desired~~-depth of cut~~ depth-of-cut without contacting the formation 348 itself. However, the head portion 337 may be configured to contact the formation 348 in response to wear exhibited by the cutting element 332,

in response to a ~~depth of cut~~ depth-of-cut that causes such contact, or by design. After drilling, a drilling tool (not shown) may be disposed to drill into the inner profile 316 of casing bit 312. The drilling tool (not shown) may proceed generally oppositely to the direction of axis y. Axis y is shown on FIG. 22C as being generally vertical in orientation and extending away from an origin that is located at the lowermost point of the cutting surface 335. Therefore, it may be advantageous to configure fastening element 338 with a length sufficient to position end region 343 to a position y2 that exceeds the uppermost position y1 exhibited by the substrate 336 of cutting element 332. Such a configuration may allow for a drilling tool to remove the end region 343 of fastening element 338 while reducing or preventing contact between the drilling tool (not shown) and the substrate 336, which, in turn, may reduce or prevent damage to the drilling tool. Of course, the length and configuration of fastening element 338 may be selected and configured in relation to the back rake angle of the cutting element 332 as well as the geometry of the inner profile 316 of casing bit 312. Further, alternatively, the present invention contemplates that the fastening element 338 may be oriented in other configurations, such as, for instance, fastening element 338 may extend into the side surface 347 of cutting element 332 through the substrate 336 and into casing bit 312.

Please amend paragraph **[00207]** as follows:

[00207] In another embodiment wherein a cutting element may be configured to become separated from a casing bit 312, a cutting element 332 may be configured with "stud-type" body 354 as shown in FIG. 22D and disclosed, in relation to drill bits, in U.S. Patent No. 4,782,903 to Strange, the disclosure of which is incorporated in its entirety by reference herein. FIG. 22D shows cutting element 332 disposed on upper portion 355 of stud-type body 354, wherein stud-type body 354 includes lower portion 360, which is depicted as being threaded. Stud-type body 354 may be disposed within recess 358 having orientation notch 357, as known in the art, formed in casing bit 312 so that lower portion 360 extends therein. As shown in FIG. 22D, internally threaded element 356 may be disposed onto lower portion 360 and may abut inner profile 316 so as to affix stud-type body 354 within recess 358 and to casing bit 312. Lower portion 360 may preferably comprise steel, aluminum, or brass so that a drilling tool may

drill relatively easily through the threaded lower portion 360. On the other hand, upper portion 355 of stud-type body 354 may preferably comprise cemented tungsten carbide for stiffness in supporting cutting element 332. Alternatively, the entire stud-type body 354 may comprise a single material, which may be any of steel, aluminum, brass, and tungsten carbide. Accordingly, after drilling, a drilling tool (not shown) may be disposed to drill into the inner profile 316 of casing bit 312, removing internally threaded element 356. Such a configuration may allow for the stud-type body 354 to be removed from recess 358 without drilling through the cutting element 332, upper portion 355 of stud-type body 354, or both, which, in turn, may reduce or prevent damage to the drilling tool. Although stud-type body 354 is shown as being threaded, other affixation structures may be used. For instance, the lower portion 360 of stud-type body 354 may be pinned, welded, brazed, or otherwise affixed to the casing bit 312. Affixing a portion of stud-type body 354 to casing bit 312 proximate to the lower portion 360 of stud-type body 354 may be advantageous in allowing a drilling tool to drill therethrough and thus release or separate the stud-type body 354 from the casing bit 312 prior to drilling tool drilling through the upper end thereof.

Please amend paragraph **[00210]** as follows:

[00210] For example, as shown in ~~FIG.~~ FIGS. 23A and 23B, drilling assembly 911 may include a first casing bit 916 and a second casing bit 914, wherein the first casing bit 916 is disposed within the second casing bit 914. First casing bit 916 may be affixed to casing section 908 and second casing bit 914 may be affixed to casing section 906. Thus, the casing sections 906 and 908 may be configured in a telescoping relationship, i.e., capable of being extended from or within one another. As shown in FIG. 23A, casing section 908 is affixed to casing section 906 by way of frangible elements 918. Frangible elements 918 may be configured to transmit torque, axial force or weight-on-bit (WOB), or both, between casing sections 906 and 908. Of course, other structures for transmitting forces between the casing sections 906 and 908 may be utilized.

Please amend paragraph **[00212]** as follows:

[00212] As shown in FIG. 23B, a casing section 904 may be disposed at a first depth. Then, casing bit 914 may be caused to drill past casing ~~bit 912~~ bit 916 and continue drilling to a second depth. Upon reaching a second depth, torque, WOB, or both, may be applied to cause frangible elements 918 to fail or fracture. Alternatively, a frangible element may be caused to fail by way of selectively detonating a pyrotechnic agent, an explosive agent, or both. Thus, casing bit 916 may be employed to drill through casing bit 914 and to a third depth. Put another way, FIG. 23B shows drilling assembly 911 in an extended telescoping relationship. Of course, the present invention is not limited to any particular number of casing bits configured in a telescoping relationship. Rather, a drilling assembly of the present invention may include one or more casing bits disposed at least partially within one or more other casing bits in a telescoping relationship. It should also be understood that the present invention is not limited to a smaller casing bit or casing section being positioned at least partially within another casing bit to be configured in a telescoping relationship. Rather, more specifically, a casing bit or casing section may be disposed within another casing section, which may be affixed to another, larger casing bit, to be configured in a telescoping relationship.

Please amend paragraph **[00216]** as follows:

[00216] FIG. 24 illustrates a casing bit 1012 according to the present invention wherein at least a portion of the leading face of a blade is formed from a superabrasive material. More particularly, casing bit 1012 includes a nose portion 1020, apertures ~~133,~~ 1033, and generally radially extending blades 1022 extending from face 1026 of casing bit 1012, the blades 1022 forming fluid courses 1024 therebetween extending to junk slots 1035 between circumferentially adjacent blades 1022. At least one of blades 1022 may comprise superabrasive segments 1023, which may be infiltrated or brazed therein or thereon, respectively. Also, as shown in FIG. 24, the superabrasive segments 1023 may form at least a portion of a rotationally leading face 1029 of at least one of blades 1022. Thus, the superabrasive segments 1023 may remove the formation as the leading face 1029 engages the formation. Alternatively, discrete regions of at least one of blades 1022 may be configured with superabrasive segments 1023 to form cutting element

regions. Superabrasive segments 1023 may be configured as thermally stable polycrystalline diamond ("TSP") wherein the metal catalyst that the diamond is sintered with is later removed, or wherein the catalyst with which the diamond is sintered does not aid in degradation of the sintered diamond structure, as known in the art. Alternatively, superabrasive segments 1023 may comprise PDC or other superabrasive material. Accordingly at least a portion of the leading face 1029 of at least one of blades 1022 may comprise TSP, PDC, or other superabrasive material. Of course, alternatively, one or more superabrasive segments 1023 may be affixed within pockets as described in relation to FIGS. 1A and 1B. Each of blades 1022 may include a gage region 1025 which is configured to define the outermost radius of the casing~~ bit~~ bit 1012 and, thus the radius of the wall surface of the borehole. Gage regions 1025 comprise longitudinally upward (as the casing bit 1012 is oriented during use) extensions of blades 1022, extending from nose portion 1020 and may have wear-resistant inserts or coatings, such as cutters, natural or synthetic diamond, or hardfacing material, on radially outer surfaces thereof as known in the art to inhibit excessive wear thereto.

Please amend paragraph **[00222]** as follows:

[00222] In a further aspect of the casing bit of the present invention, at least one sensor configured for measuring a condition of drilling, a condition of the casing bit, or a formation characteristic may be included by the present invention. Particularly, as to measurements concerning the casing bit, revolutions per minute, rate-of-penetration, torque-on-bit, weight-on-bit, strain measurements at one or more surface of the casing bit may be measured, and temperatures at one or more~~ location~~ locations within or near the casing bit may be measured. As to the formation being drilled, formation hydrostatic pressure, pore pressure, temperature, azimuth, inclination, resistivity, gamma emissions, caliper, or other formation or borehole characteristics may be measured. Further, a casing bit of the present invention may include a sensor or a sensor may be positioned near the casing bit of the present invention. Further, a measurement obtained via a sensor may be stored, communicated to operators thereof, or both. Such a communication system may include fiber-optic transmission, electromagnetic telemetry, wired pipe, or as otherwise known in the art. U.S. Patent Nos. 6,626,251, 6,571,886,

6,543,312, and 6,540,033, each assigned to the assignee of the present invention, the disclosure of each of which is incorporated in its entirety by reference herein, each disclose a method and apparatus for monitoring and recording of the operating condition of a conventional downhole drill bit during drilling operations.

Please amend paragraph **[00224]** as follows:

[00224] As shown in ~~FIG.~~ FIGS. 26A and 26B, casing bit 1212 may include discrete cutting element retention structures 1224 for carrying cutting elements 1230. Thus, cutting elements 1230 may be affixed within discrete cutting element retention structures 1224 of casing bit 1212 by way of brazing, welding, or as otherwise known in the art. Also, casing bit 1212 may include gage regions 1225 at circumferential positions thereabout, the gage regions 1225 configured to define the outermost radius of the casing ~~bit~~ bit 1212 and, thus the radius of the wall surface of the borehole. Gage regions 1225 comprise longitudinally upward (as the casing bit 1212 would be oriented during use) extensions from nose portion 1220, forming junk slots 1235 between circumferentially adjacent gage regions 1225 and may have wear-resistant inserts or coatings, such as cutters, natural or synthetic diamond, or hardfacing material, on radially outer surfaces thereof as known in the art to inhibit excessive wear thereto.

Please amend paragraph **[00227]** as follows:

[00227] More specifically, as shown in ~~FIG.~~ FIGS. 27A and 27B, casing bit 1312 may include a plurality of percussion inserts 1330 for causing failure in the formation by contact therewith. In contrast to a shearing action that may be provided by the cutting surface of a PDC cutting element, percussion inserts 1330 may be configured to cause a level of tensile stress, compressive stress, or combination thereof within a formation, by way of contact therewith, sufficient to fail a portion of the formation. Percussion inserts may comprise, for instance, cemented tungsten carbide, diamond, or both and may be generally configured geometrically as a rolling cone insert, which may be generally rounded, chisel shaped, or moderately pointed, or as otherwise known in the art. Percussion inserts 1330 may be affixed within casing bit 1312 by way of brazing, welding, press-fitting, or as otherwise known in the art. Also, casing bit 1312

may include gage regions 1325 at circumferential positions thereabout, the gage regions 1325 configured to define the outermost radius of the casing bit and, thus the radius of the wall surface of the borehole. Gage regions 1325 comprise longitudinally upward (as the casing bit 1312 would be oriented during use) extensions from nose portion 1320, forming junk slots 1335 between circumferentially adjacent gage regions 1325 and may have wear-resistant inserts or coatings, such as cutters, natural or synthetic diamond, or hardfacing material, on radially outer surfaces thereof as known in the art to inhibit excessive wear thereto.